

TELEPHONE SYSTEMS, GENERAL

8043

(No. 9 Sept. 1995)

CDF, in its day-to-day operations, utilizes a statewide system of voice and data grade telephone communications with three primary service providers:

1. The California Public Safety Microwave System (the "green phone" system) which is managed by the Telecommunications Division.
2. CALNET. A long distance telephone service managed by the Telecommunications Division (formerly known as ATSS).
3. The public switched telephone networks (the "phone company").

The Department's telephone equipment varies from a single rotary-dial instrument in a lookout or station without access to touchtone to sophisticated multi-line electronic key systems with microwave interconnects and data transmission capability. The transition from leased to state owned and from electromechanical (old fashioned, massive on-premise switching equipment) to compact electronic systems is ongoing. System replacements are expensive and require careful justification and advance planning by the local TCO. The senior TCO and staff arrange for procurement of new or upgraded systems based on a statewide priority list and availability of funds.

The CDF unit and region TCOs are responsible for overall management and maintenance of the telephone systems in their respective administrative units. The new telecommunications system analysts being added to the regional offices will no doubt be assigned some or all of the agency telephone representative duties for their areas.

HOW TO GET HELP IN PLANNING, PURCHASING, INSTALLING AND MAINTAINING TELEPHONE SYSTEMS 8043.1

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Every TCO or person assigned as agency telephone representative (ATR) for their administrative unit should have a copy of the Telecommunications Division's Users Handbook. This reference manual contains a wealth of basic and technical information about telephone hardware, systems, vendors, public utilities, service and repair, billing, purchasing and so forth. There is no reason to try and duplicate all of its good information here. Suffice it to say that any TCO or ATR without this guidebook will be missing out on an extremely valuable sourcebook. Copies may be obtained by writing to:

State of California
Department of General Services
Telecommunications Division
601 Sequoia Pacific Blvd.
Sacramento, CA 95814-0282

Attn. Handbook Coordinator

Step one in any telephone system upgrade or new facility installation is for the TCO or ATR to thoroughly understand who will be using telephones and how they will be using them. A common mistake is in not taking the time to analyze the total work environment, with specific attention paid to the way each staff section presently uses their telephones, and determining exactly what the new system will be required to do to satisfy the needs of the various office groups or functions. Start this analysis early. Do it thoroughly. Call in outside expertise. Use the teamwork approach, from initial analysis through final installation and acceptance.

Following is an example of an action sequence for the replacement of a unit headquarters telephone system:

1. Local TCO submits system replacement request and justification through channels to HQ telecommunications management.
2. Project approved. HQ analyst and region ATR meet with TCO for initial planning and needs analysis.
3. TCO, with assistance from HQ analyst and region ATR, prepares and submits a Telephone System Acquisition Package in accordance with Telecommunications Division requirements.
4. HQ analyst handles processing of acquisition package through various stages until Office of Procurement approves system purchase and releases bid information to prospective vendors.
5. TCO submits form 20s as required to Pacific Bell or others.
6. TCO coordinates as required with radio technicians and submits COM-207, if required, for modifying or interfacing radio circuits in conjunction with telephone system work.
7. Prospective telephone equipment vendors make on-site visits to gather bid information.

8. Successful bidder installs system. TCO and HQ analyst monitor work and see that system is fully functional.
9. Vendor and TCO provide training on new equipment for all users.

As in any telecommunications project, meticulous planning and attention to details are crucial. See [Section 8007](#). Remember, also, that Pacific Bell or any of the other cable companies will only bring their service (telephone lines) to the location of your service connection panel (telephone closet).

A headquarters, conservation camp or ECC system replacement will require the TCO or ATR to prepare a lengthy technical and justification document known as the Telephone System Acquisition Package. This entails considerable work and should be started as soon as possible. It may be helpful to contact another unit's TCO who has recently gone through a system replacement.

In addition to the excellent information available in the User's Handbook previously described, the TCO should avail himself or herself of the assistance available from:

- the region TCO or ATR
- HQ senior TCO and staff analysts
- radio technicians (for radio/telephone interface questions)
- equipment vendors (general information on system features)
- service providers (Pacific Bell, Citizens Utilities, etc.)
- telecommunications division agency support consultant (when recommended by HQ telecommunications analyst)
- fellow TCOs who have recently gone through a system upgrade or replacement

TELEPHONE EQUIPMENT AND SERVICES NOT REQUIRING APPROVAL OF TELECOMMUNICATIONS DIVISION (STANDARD DELEGATION)

8043.2

(No. 9 Sept. 1995)

The TCO or ATR may, using form 20 Telecommunications Service Request, order the following items or services directly from the appropriate vendor or service provider without approval from the Telecommunications Division (form 20s from units go to region ATR for coordination and rerouting to telephone company). Check with HQ telecommunications analyst if unsure about an item.

Activate existing lines
Answering machine
Bells and horns

Busy study request
CALDEX lines (routine activity for existing service)
Calling cards
CALNET
Cellular service
Cenpac
Centrex lines (routine activity for existing lines)
Change telephone number
Cords, including long cords
Disconnect service or equipment
Fax machine groups I, II and III
Foreign exchange line
Headsets
Jacks (to replace jacks or extend line cord within work area)
KSU-less telephone
Line cards (except sole-source)
Long distance carrier selection (except consolidated centrex or CALDEX users)
Measured business line
Modem
Off premise extension (OPX)
Paging system equipment or service
Relocation of equipment (except 1A2 system)
Repair of equipment
Reprogramming of electronic telephone systems
Single line record request
Station cards (except sole-source)
Telecommunications device for the deaf (TDD)
Trunk cards (except sole-source)
Voice mail (changes to existing service)

PRIVATE RESIDENCE TELEPHONE SERVICE

8043.2.1

(No. 22 September 2003)

Per the State Telecommunications Management Manual (STMM), Section 0205.0, a request for state-paid telephone service installation in a private residence shall address the following usage guidelines and have requests for service approved by the Department's primary agency telecommunications management representative (ATR) (which in CDF is the TSA-II Telephone Systems Specialist located at headquarters), after having been approved by the Unit Chief and Region Chief. A Form 20 must be completed that provides sufficient detail to ensure specific requirements are being met.

The following items must be addressed in the request:

- An explanation of the installation parameters for this state-paid telephone service.
 - Justifications may include the following types of situations:
 - An approved telecommuting job position.
 - An injury or illness recuperation that requires an extended home stay.
 - Poor cell phone coverage for the types of situations above that necessitates wired phone service necessary to conduct state business.
 - Include an estimate of the expected duration of need.
- Identify the cost benefit to the state or agency program.
 - Including specific installation and monthly service costs.
 - Costs of alternative methods, if any, such as cell phone service (if coverage is available).
- The state-paid service shall not be in lieu of personal telephone service and will be used for conduct of state business only.
- The service must be a “business service” from the Local Exchange Carrier (LEC) and use “State of California” as the business identifier.
- CALNET/MCI must be utilized as the long distance carrier.

In addition, the following requirements must be met:

- Toll charges shall be reviewed in order to identify possible abuse/misuse.
 - The employee will have primary responsibility to audit the monthly bills.
 - The employee’s direct supervisor must also review the bills on a monthly basis.
- A timely removal of telephone services must be done when it is no longer required or no longer meets established criteria.
 - Positive notification of service termination must be made to state headquarters ATR (as listed above).

- CDF must maintain a list of state-paid private residence telephone numbers and make it available to DGS Telecommunications Division upon request.
 - This list shall be maintained by the headquarters ATR (as listed above).
- A copy of the policy letter shall be available to the DGS Telecommunications Division upon request.

As required by STMM 0205.0 this policy has been approved by the CDF Director.

TELEPHONE SERVICE AND EQUIPMENT DESCRIPTIONS 8043.3

(No. 9 Sept. 1995)

There are a multitude of telephone industry products and services available. The jargon can be confusing to a person who has little or no experience dealing with telephone systems. A few of the most widely-used terms are described in the following section:

Plain Old Telephone Service (POTS)

Refers to telephone service provided without any exotic or highly technical equipment. Generally, POTS is described as a system of telephone lines and stations (instruments).

Key Telephone System (KTS)

An arrangement of telephones, wiring and other necessary equipment which provides a means of answering one or more lines by one or more telephones, and transferring calls to another station. The word "key" is from early telephone days. Types of key telephone systems include: pushbutton telephones, call directors, panel-mounted modules, 10- or 20-line key units, sets with externally-mounted keys, and telephones with no associated key equipment when they are part of a key telephone system.

Electronic Key Telephone System (EKTS)

This is a modern system consisting of a common equipment cabinet that includes a central processing unit (CPU) with stored program control and power supply. It is analogous to a computer with proprietary software to run the system. Additional components are line/station cards (printed circuit cards) and work station equipment (instruments). Instruments must be proprietary electronic key phones and refers to an improved type of Dial PBX service. It is an arrangement that serves station users from a central switching machine located either on a subscriber's premises or on a telephone

company's property. A centrex device permits outside callers to dial directly to telephones within the system without going through an operator. This is called Direct Inward Dialing (DID). In some areas, Centrex systems also provide automatic identification of outward dialing (AIOD) and charges made to the originating telephone number. All Centrex systems used by the state of California have AIOD capabilities.

Business Lines

These telephone lines are provided for business or governmental agencies. They differ from residential service in the volume of originating and terminating calls. Business lines are used in state offices and facilities where Centrex, Caldex or switchboards are not needed.

PBX Service

Private Branch Exchange (PBX) systems are usually found in large offices or enterprises where sizeable expansion capability is needed. Many hospitals, government buildings and college campuses have PBXs. The telephone switch is located on the customer's premises which allows inter-office calling as well as access to the public exchange network. Station equipment may be proprietary multiline sets or single line phones.

Leased Line

A channel leased from a common carrier (Pac Bell, for instance) by an end user, which is used exclusively by that end user. Same as "dedicated circuit" or "private line." Used by CDF primarily for connecting radio and microwave circuits between two or more points where it would be cost-prohibitive to install a microwave or radio link. For example, leased lines are used in several units to carry radio and microwave transmissions between the ECC radio vault and a key communications point on a mountaintop nearby. It requires a COM-207 submitted through channels to Telecommunications Division, if there will be an interface with radio or microwave circuits. A form 20 submitted through channels (region ATR) to the telephone company is required for all leased line requests.

Cellular Service

Cellular service is a system capable of switching a call in progress from one repeater station to another as a vehicle moves from one cell coverage area to another. This is called "follow me roaming." Service is good along the main highways in California where the service providers have concentrated their facilities. Service is gradually being extended into rural areas as the popularity of cellular service grows.

The versatility of cell phones in areas of good coverage has been amply demonstrated on many of CDF's recent major incidents. It is also an extremely valuable tool for incident commanders and administrators in daily operations.

Aside from lack of coverage in more remote areas of state responsibility, the main drawback of cellular service is the high cost of calling time. Good judgment is required on the part of unit administrators and TCOs to guard against unreasonable costs for service.

There are four costs associated with cellular service:

1. Set-up cost of the service (one time charge).
2. A fixed monthly rate for access to the cellular network. This charge is negotiable with the service provider.
3. Call usage cost, charged on a per-minute basis. Usage charges include both incoming and outgoing calls.
4. Long distance charges.

CDF TCOs or ATRs, with the approval of their unit manager and budget officer, may order cellular telephones and service by submitting Std. 20 (for service) with justification plus a completed SPO (for equipment, obtain 3 bids first). Send the documents through channels to HQ telecommunications management. Once reviewed, approved and signed, the paperwork will be returned through channels to the person originating the request. Accompanying the paperwork will be CDF telephone instrument property stickers which must be affixed to the new equipment.

CALNET

This is the California Integrated Communications Network. This state-owned and operated telecommunications network provides local and long distance telephone service with a variety of features, as well as data and video, to state agencies and local governments. State offices in the metropolitan areas of Sacramento, San Francisco bay region and the Los Angeles basin are the major users of CALNET. The Telecommunications Division maintains the network, which was formerly known as ATSS.

THE 9-1-1 EMERGENCY SYSTEM

8043.4

(No. 9 Sept. 1995)

California's 9-1-1 program objective is to provide citizens with rapid, effective access to various kinds of emergency assistance from any telephone in the state. Government Code Section 53100 provides legal authority for implementing 9-1-1 throughout the state.

California's 9-1-1 program requires the establishment of a network of Public Safety Answering Points (PSAPs) in strategic locations statewide. The PSAPs interconnect to local public safety agencies such as police, fire and emergency medical service. The PSAP operators redirect (transfer) emergency calls to the correct agency or department for follow-up response. All CDF ECCs are connected to PSAPs, and some may function as secondary PSAPs.

Telecommunications Division's Emergency Telephone Services Section is charged with monitoring the statewide 9-1-1 system. Staff analysts approve expenditures for local government to implement 9-1-1. They also assist in equipment and service ordering and perform compliance reviews.

CDF telecommunications management has designated one of the Sacramento Command Center officers to be CDF's 9-1-1 coordinator. This person is the primary contact for field TCOs needing help with 9-1-1 information. If further expertise is needed, you may be referred to one of Telecommunications Division's 9-1-1 specialists.

All CDF command and coordination centers should have a reference copy of the 9-1-1 Operations Manual published by the Telecommunications Division. If one is needed, send a written request to:

Telecommunications Division
9-1-1 Program
601 Sequoia Pacific Blvd.
Sacramento, CA 95814-0282

9-1-1 REIMBURSEMENT PROCEDURES

8043.4.1

(No. 9 Sept. 1995)

Units will use the following procedures when submitting claims for reimbursements for approved 9-1-1 expenditures:

1. Comply with reimbursement instructions detailed in the above-referenced 9-1-1 Operations Manual.
2. Expenditures approved by the 9-1-1 system should be coded to the unit's index, PCA code 02355, and the appropriate object code.
3. Prepare five (5) copies of reimbursement documents outlined by the Manual. Send the original plus two (2) copies to the Telecommunications Division, attention 9-1-1 Program. Send two (2) copies to CDF HQ telecommunications management, attention 9-1-1 Coordinator.
4. Personnel Services claims will be approved by CDF for overtime only. Use Overhead/Crew/Equipment Report FC-33 to document authorized overtime. It must accompany reimbursement documents to claim overtime. Any standard time claimed as a reimbursement will revert back to the General Fund and will not be loaded into the budget.
5. Fire Protection staff will forward copies of supporting documents to the Budget Office for approval.
6. The Budget Office will prepare the budget load sheet and load the appropriate amount into the unit's index, PCA 02355, and the appropriate budget allotment. Copies of the load sheets will be forwarded to HQ Fire Protection and the unit.
7. Sacramento HQ will deposit warrants received as a result of 9-1-1 reimbursements. Units will send original warrants to HQ Fire Protection immediately upon receipt.

TELEPHONE FLOOR PLANS AND KEY SYSTEM WORKSHEETS

8043.5

(No. 9 Sept. 1995)

An up-to-date office or facility floor plan is an essential tool for the TCO or ATR responsible for managing the unit's telephone system. It provides a quick reference to all telephone instrument locations and number of instruments. It identifies individuals or functions having assigned phones or groups of phones. The floor plan is helpful in directing telephone company installers and other technicians to desired locations. Key systems would have the station designation on the floor plan with the correct key system number. If a current telephone floor plan isn't available for your facility, it would be wise to prepare one for future use.

Key System Worksheets are used by telephone company sales representatives and craftpersons so they can readily identify telephone lines and equipment installed on a particular key telephone system. It is necessary to have an up-to-date Key System Worksheet for each key system under your supervision. The worksheets have all of the station/line/feature information captured in one place, so their value in planning changes to the system is considerable. Your respective telephone company service representative will provide current Key System Worksheets and updated ones when changes are made.

TELECOMMUNICATIONS SERVICE REQUEST, FORM STD. 20

8043.6

(No. 9 Sept. 1995)

What the Com-207 is to radio and microwave projects or jobs, the state standard form 20 is to telephone equipment and service needs. CDF and all other state agencies whose telecommunications systems are technically supported by Telecommunications Division are required to use the form. All orders for new telephone equipment and services which do *not* fall within the standard delegation (see Section 8043.2) must be submitted on form 20, through channels, starting with the region ATR or TCO-to the Telecommunications Division. Equipment and services which *are* listed in the standard delegation may be ordered directly from the telephone service provider or equipment vendor-also on form 20, and also routed through the region ATR or TCO. Coordination of form 20s at the region office greatly enhances efficient follow-up on requests because the vendor and service representatives have one key contact who is familiar with all CDF facilities, TCOs and pending form 20s.

See forms [Section 8060](#) for STD. 20 instructions. Tip: fax form 20s whenever possible to save processing time.

EMERGENCY PAGE LISTINGS

8043.7

(No. 9 Sept. 1995)

At least annually, sometimes more often, service providers such as Pacific Bell send out emergency page listing worksheets for corrections and changes prior to the next directory printing. These may arrive at the units directly from the telephone company or rerouted from region or Sacramento. It is important for each TCO to carefully review and correct these worksheets and return them promptly to the office or person specified on the cover letter.

PRIORITY SERVICE AND REPAIR (PACIFIC BELL)

8043.8

(No. 9 Sept. 1995)

Every TCO and ATR should become acquainted with and establish a good working relationship with the telephone service representative and/or account manager who is assigned to coordinate CDF service requests in the local area. These are your best friends and allies in getting prompt and correct action on your telephone work orders (form 20s) and assisting with such things as installation of emergency lines during major incident ECC expansion, etc.

Priority Service and Repair is a service offered by Pacific Bell. All Pacific Bell telephone directories publish an 800 number for use in requesting rapid response by telephone service and repair personnel. This can be of great value during major incidents, when CDF cannot afford to have emergency lines and dedicated circuits out of service for long. Verbal requests for service on the 800 number must be followed up with written service requests, using form 20 per normal procedures.

Disconnects and service terminations for extra lines installed during major incidents are also handled by using form 20 with normal routing.

[\(see next section\)](#)

[\(see HB Table of Contents\)](#)

[\(see Forms or Forms Samples\)](#)